Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently amended) A method, in a data processing system, for optimizing runtime execution of a computer program, comprising:

~~modifying~~ obtaining performance profile data accumulated during a trace of a computer program execution to include annotations based on the occurrence of one or more events during execution of the computer program, wherein the one or more events occur based on hardware counter values and performance indicators associated with one or more portions of the computer program;

obtaining code for the computer program;

~~providing the annotated performance profile data to a computer program compiler; and~~

~~identifying~~ determining a manner for compiling the code to provide one or more optimizations to the runtime execution of the computer program based on the performance profile data and the annotations, wherein the one or more optimizations include at least one of an optimization to instruction paths of the computer program at branch points such that a more contiguous execution of instructions within the computer program is achieved, and an optimization to storage of instructions or data in a cache so that portions of a cache line that is falsely shared are stored in the cache on different cache lines;

presenting the one or more optimizations to a programmer using one or more graphical user interfaces;

receiving one or more selected optimizations of the one or more optimizations selected by the programmer; and

compiling the code using the one or more selected optimizations to generate an optimized computer program.

2-10 (Canceled)

11. (Currently amended) A computer program product recorded in a recordable-type computer readable medium for optimizing runtime execution of a computer program, comprising:

first instructions for ~~modifying~~ obtaining performance profile data accumulated during a trace of a computer program execution to include annotations based on the occurrence of one or more events

during execution of the computer program, wherein the one or more events occur based on hardware counter values and performance indicators associated with one or more portions of the computer program;

second instructions for obtaining code for the computer program;

~~second instructions for providing the annotated performance profile data to a computer program compiler; and~~

third instructions for ~~identifying~~ determining a manner for compiling the code to provide one or more optimizations to the runtime execution of the computer program based on the performance profile data and the annotations, wherein the one or more optimizations include at least one of an optimization to instruction paths of the computer program at branch points such that a more contiguous execution of instructions within the computer program is achieved, and an optimization to storage of instructions or data in a cache so that portions of a cache line that is falsely shared are stored in the cache on different cache lines;

fourth instructions for presenting the one or more optimizations to a programmer using one or more graphical user interfaces;

fifth instructions for receiving one or more selected optimizations of the one or more optimizations selected by the programmer; and

sixth instructions for compiling the code using the one or more selected optimizations to generate an optimized computer program.

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12-19. (Canceled)

20. (Currently amended) A system for optimizing runtime execution of a computer program, comprising:

one or more processors, the one or more processors including:

means for ~~modifying~~ obtaining performance profile data accumulated during a trace of a computer program execution to include annotations based on the occurrence of one or more events during execution of the computer program, wherein the ~~modifying~~ obtaining means includes hardware counters and performance indicators, and wherein the one or more events occur based on values of the hardware counters and the performance indicators associated with one or more portions of the computer program;

means for obtaining code for the computer program;

~~means for providing the annotated performance profile data to a computer program compiler; and~~

means for ~~identifying~~ determining a manner for compiling the code to provide one or more optimizations to the runtime execution of the computer program based on the performance profile data

and the annotations, wherein the one or more optimizations include at least one of an optimization to instruction paths of the computer program at branch points such that a more contiguous execution of instructions within the computer program is achieved, and an optimization to storage of instructions or data in a cache so that portions of a cache line that is falsely shared are stored in the cache on different cache lines;

means for presenting the one or more optimizations to a programmer using one or more graphical user interfaces;

means for receiving one or more selected optimizations of the one or more optimizations selected by the programmer; and

means for compiling the code using the one or more selected optimizations to generate an optimized computer program.

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